CKD

SM-270770-A

INSTRUCTION MANUAL

SERIAL TRANSMISSION TYPE

MN$\frac{3}{4}$GA$\frac{1}{2}$-T7G1

MN4GB$\frac{1}{2}$-T7G1

- Please read this instruction manual carefully before using this product, particularly the section describing safety.
- Retain this instruction manual with the product for further consultation whenever necessary.

CKD Corporation

For Safety Use

To use this product safety, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism is required (to the level pursuant to JIS B 8370 Pneumatic System Rules).

We do not bear any responsibility for accidents caused by any person without such knowledge or arising from improper operation.

Our customers use this product for a very wide range of applications, and we cannot keep track of all of them. Depending on operating conditions, the product may fail to operate to maximum performance, or cause an accident. Thus, before placing an order, examine whether the product meets your application, requirements, and how to use it.

This product incorporates many functions and mechanisms to ensure safety. However, improper operation could result in an accident. To prevent such accidents, **read this instruction manual carefully for proper operation.**

Observe the cautions on handling described in this manual, as well as the following instructions:

⚠ PRECAUTIONS

- Incorrect address settings of serial transmission slave stations could cause the solenoid valve and the cylinder to malfunction.
- For operation if serial transmission slave stations, read the communication system operation manual carefully.
- Do not touch electric-wiring connections (exposed live parts): this will cause an electric shock. During wiring, keep the power off. Also, do not touch these live parts with wet hands.
- This product does not meet the surge immunity requirements specified in EN61000-4-5 for CE marking. Please provide appropriate protective measures against lightning surges on the device side.
- When the valve power is turned on (i.e., at power-up), the valve lamp may light up momentarily. However, the valve itself is not turned on or off as a result of this.

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MN4G※※-T7G1
Serial Transmission Type
Manual No. SM-270770-A

NOTE : Letters & figures enclosed within Gothic style bracket (examples such as [C2-4PP07] · [V2-503-B] etc.) are editorial symbols being unrelated with contents of the book.

Sep.24.1999
Revision : JULY.19.2004

1. PRODUCT

1.1 General outline of the system

MN4G※※-T7G1

1) This solenoid valve system is equipped with a remote I/O station (slave station unit OPP4-1G), the CC-Link Open field network system.
   (1) It helps to curtail wiring man-hours as it requires twist pair cables only to connect it with PLC.
   (2) Up to 64 units of the slave station OPP4-1G having 16 output points, are able to be connected to one master unit, made by Mitsubishi Denki Company Ltd.
   (3) Using H/C switch, the output signal during abnormal communication is held or all-point OFF can be selected.
   (4) The communication speed can be set to : 156K, 625K, 2.5M, 5M and 10M bps.

2) CC-link system

The CC-Link is one of Open field network system including remote I/O devices and intelligent devices (high speed counters, inverters, etc.), can be configured with reduced wire connections. Moreover, the user can create programs that control these devices installed away from the master station without being aware of the communication protocols. The CC-Link system has the following features:

   (1) To a single master station, the CC-Link system allows the connection of up to 64 remote I/O stations and the control over up to 2048 input and output points.
   (2) The scan time achieved through the links between the master and remote I/O stations is 4 ms when the number of the controlled I/O points is 2048 (at the data transfer rate of 10M bps).
   (3) The CC-Link system allows cyclic transfer not only of bit data but also of word data.

The CC-Link is maintained and controlled by the CC-Link Association (CLPA).

Note : Before using this product, thoroughly read the User's Manual. This document mainly describes MN4G-T7G1 and slave station (OPP4-1G). For details about other units (master and slave stations) to be connected to the CC-Link, read relevant User's Manual.
Before operating this manifold solenoid valve, thoroughly read both this document and above manual to fully understand its functionality and performance.

If the customer has any question about the CC-Link, contact the following home page.

CC-Link Association

Home page address : **http://www.cc-link.org**

1.2 Structure of the System

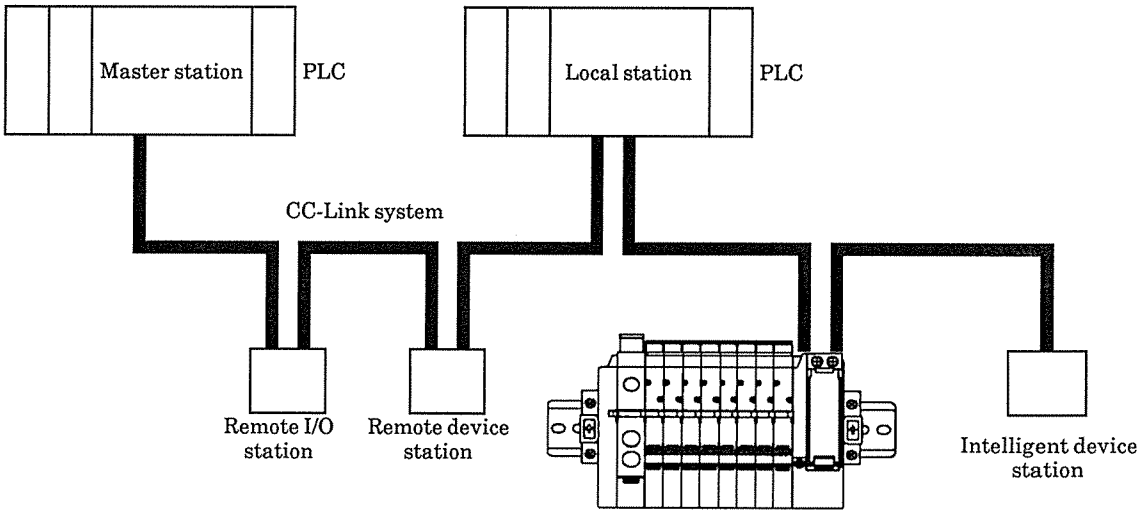
This system chiefly consists of PLC body, Master unit, Solenoid valve MN4G※※-T7G1 and peripheral equipment.

- Combination of PLC and Master unit

Type of CPU	Type of Master unit
AnN / AnA / AnU CPU	AJ61BT11
AnS / A2US CPU	A1SJ61BT11
QnA CPU	AJ61QBT11
Q2AS CPU	A1SJ61QBT11
Q series	QJ61BT11

※ The above table shows the list of master stations manufactured by Mitsubishi Electric. However, MN4G□-T7G1 is so designed that it can be connected to a CC-Link master station of each manufacturer.

- Fundamental structure of system



The solenoid valve manihold
(Remote I/O station)

Master station ..... Station controlling remote I/O stations, remote device stations, and local stations.

Remote I/O station ..... Remote station that handles ON/OFF data only.

Remote device station ..... Remote station that handles ON/OFF data and numerical data.

Local station ..... Station that has its own CPU and can communicate with the master station and other local stations.

Intelligent device station ..... Station informed by the transient transmission (including the local station)

1.3 Specifications

1) Specification of solenoid valve

(1) Specification of Manifold

Item		Specification	
		MN4G※1 series	MN4G※2 series
Installation using a manifold		DIN rail mounting type	
Applicable solenoid valve		MN4G※1 series	MN4G※2 series
№ of stations		2 to 8 (16 stations Max. for single valve)	
Supply / Exhaust		Centralized supply/exhaust (with built-in exhaust-induced error prevention valve)	
Ambient temperature °C		−5 - 55	
Atmosphere		Operation in the presence of corrosive gas not allowed	
Media temperature °C		5 - 55	
Port size	Supply Port (P) Exhaust Port (R)	Push in joint ϕ6, ϕ6.4 and ϕ8	Push in joint ϕ8 and ϕ10
	Cylinder port (A ·B)	Push in joint ϕ4 and ϕ6 M5 (A type)	Push in joint ϕ6 and ϕ8 Rc1/8 (A type)
	External pilot port (PA · Option)	Push in joint ϕ6	

(2) Electromagnetic valve specifications

Model / Item	MN4G※1 series						
	4-port valve					3-port valve	
	2-position		3-position			2-position	
	Single	Double	All ports blocked	ABR connection	PAB connection	Normal close	Normal open
	N4G※110	N4G※120	N4G※130	N4G※140	N4G※150	N3GA110	N3GA1110
Media	Compressed air						
Valve configuration	Pilot soft spool						
Minimum working pressure MPa	0.2						
Maximum working pressure MPa	0.7						
Proof pressure MPa	1.05						
Effective sectional area mm^2	4.0		4.5	4.0	4.5	4.0	
※1 Responese time ms	12	9	15			12	
Lubrication	Not required {If lubrication is required, use turbine oil ISO VG32 , 1st grade.}						
Protection rating	Dust proof						
Manual override	Allows a non-lock type operation as well as a lock type operation.						

※1 The response time shown in the table is when the power is on with the supply pressure of 0.5 MPa and no lubrication. It changes depending on the supply pressure and the type of oil in the case of lubrication.

Model / Item	MN4G※2 series						
	4-port valve					3-port valve	
	2-position		3-position			2-position	
	Single	Double	All ports blockde	ABR connection	PAB connection	Normal close	Normal open
	N4G※210	N4G※220	N4G※230	N4G※240	N4G※250	N3GA210	N3GA2110
Media	Compressed air						
Valve configuration	Pilot soft spool						
Minimum working pressure MPa	0.2						
Maximum working pressure MPa	0.7						
Proof pressure MPa	1.05						
Effective sectional area mm^2	9.0		10.0	9.0	10.0	9.0	
※1 Responese time ms	19	18	30			19	
Lubrication	Not required {If lubrication is required, use turbine oil ISO VG32 , 1st grade.}						
Protection rating	Dust proof						
Manual override	Allows a non-lock type operation as well as a lock type operation.						

※1 The response time shown in the table is when the power is on with the supply pressure of 0.5 MPa and no lubrication. It changes depending on the supply pressure and the type of oil in the case of lubrication.

(3) Electrical specifications

Item	Specifications
Rated voltage (V)	DC24
Holding current (A)	0.025 (DC24V)
Power consumption (W)	0.6
Allowable fluctuation from rated voltage	+10%, −5%
Heat-proof class	B
Surge absober	Standard device
Indicator	With lamp

Values of holding current and power consumption are for valve with lamp.

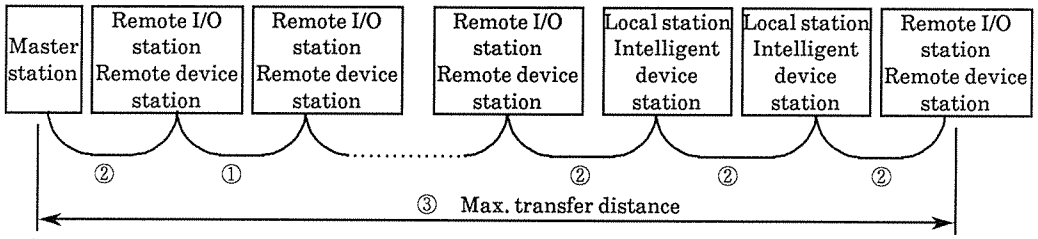
2) Transmission specifications

Item	Specofocations
Transfer rate	156k / 625k / 2.5M / 5M / 10M bps (selectable)
Max. transfer distance (overall cable length)	Depends on transfer rate (※1)
Call processing	Polling
Synchronization	Frame synchronization
Encoding	NRZI
Bus	RS485
Data transfer format	HDLC
Error detection	CRC ($X^{16}+X^{12}+X^5+1$)
Cable	Shielded twist pair cable (See 4.1 "Wiring".)

※1. "Max. transfer distance"

The following explains the relationships between the transfer rate and the maximum transfer distance:

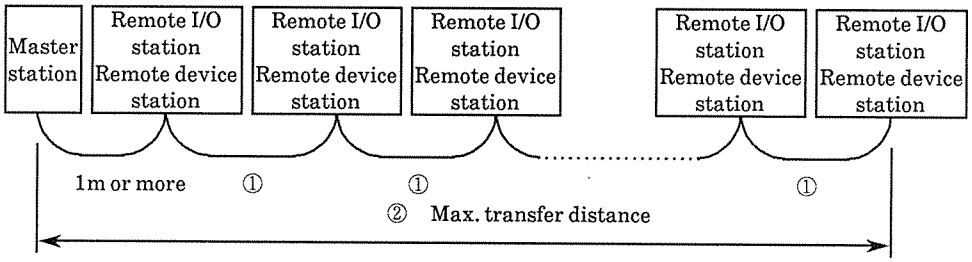
• System Configuration including local station and intelligent device station



B RATE (Transfer rate)	Cable exclusively for CC-Link (KURAMO DENKO: FANC-SBH, etc.)			High-performance cable exclusively for CC-Link (KURAMO DENKO: FANC-SBH, etc.)		
	①※	②	③	①※	②	③
4 (10Mbps)	1.0m or more	2m or more	100m or less	1.0m or more	2m or more	80m or less
	0.6m or more		80m or less	0.7m or more		50m or less
	0.3m or more		50m or less	–	–	–
3 (5Mbps)	0.6m or more		150m or less	0.6m or more	2m or more	150m or less
	0.3m or more		110m or less	0.3m or more		110m or less
2 (2.5Mbps)	0.3m or more		200m or less	0.3m or more		200m or less
1 (625Kbps)			600m or less			600m or less
0 (156Kbps)			1200m or less			1200m or less

※ The length shown in Conditions ① above indicates the length of a cable getting between the remote I/O station or remote device station, and the cable length when the master station, local station and intelligent station are connected to either one at least is as shown in Condition .

• System comprising the remote I/O station and remote device station only



B RATE (Transfer rate)	№ of total remote	①	Cable exclusively for CC-Link (KURAMO DENKO: FANC-SBH, etc.)	High-performance cable exclusively for CC-Link (KURAMO DENKO: FANC-SBH, etc.)
			②	②
4 (10Mbps)	64 or less	1.0m or more	100m or less	100m or less
		0.7m or more	80m or less	100m or less
		0.6m or more	80m or less	30m or less
		0.4m or more	50m or less	30m or less
		0.3m or more	50m or less	20m or less
	48 or less	0.4m or more	50m or less	100m or less
		0.3m or more	50m or less	80m or less
	32 or less	0.3m or more	50m or less	100m or less
3 (5Mbps)	64 or less	0.6m or more	150m or less	160m or less
		0.3m or more	110m or less	160m or less
2 (2.5Mbps)		0.3m or more	200m or less	400m or less
1 (625Kbps)			600m or less	900m or less
0 (156Kbps)			1200m or less	1200m or less

⚠ CAUTION

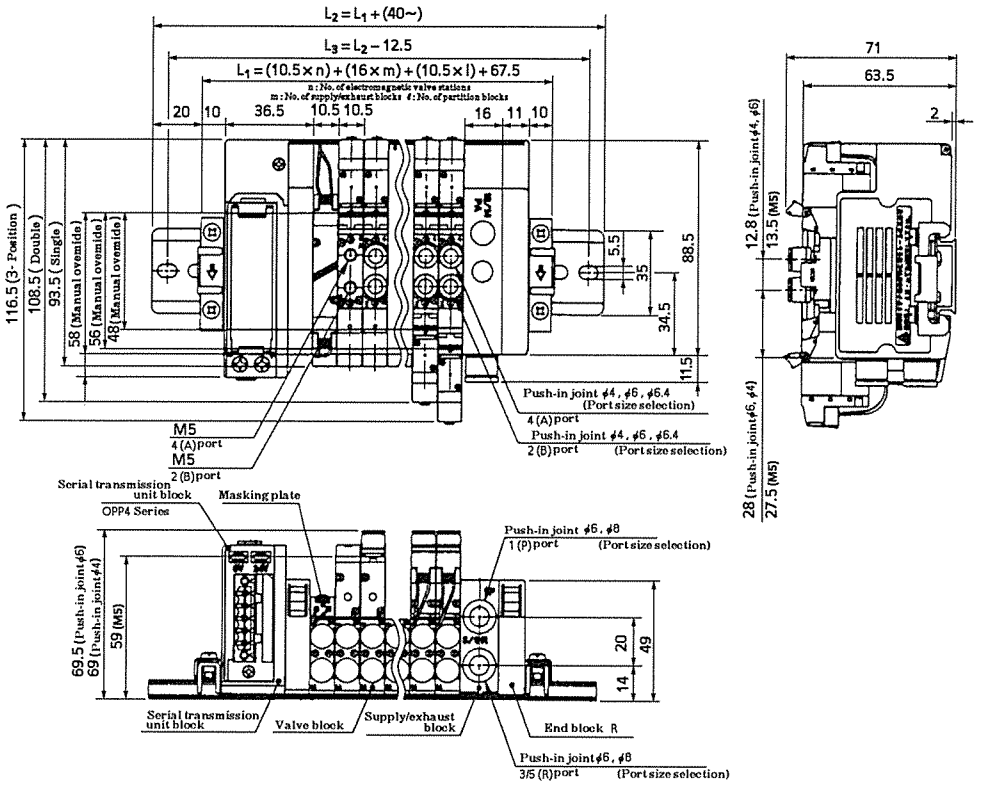
- Since the transfer distance varies, depending on the transfer rate and communication cables used or the like, refer to the CC-Link User's Manual issued by MITSUBISHI ELECTRIC EQUIPMENT CO., LTD. or check it through the cable manufacturer, etc.
- Since the number of stations (remote stations) connected differs, depending on the number of occupied stations and conditions of transfer distance or the like, refer to the CC-Link User's Manual issued by MITSUBISHI ELECTRIC EQUIPMENT CO., LTD. or check it through the cable manufacturer, etc.
- The CC-Link exclusive cable and CC-Link exclusive high-performance cable should not be mixed with each other for use.

3) Slave station specification

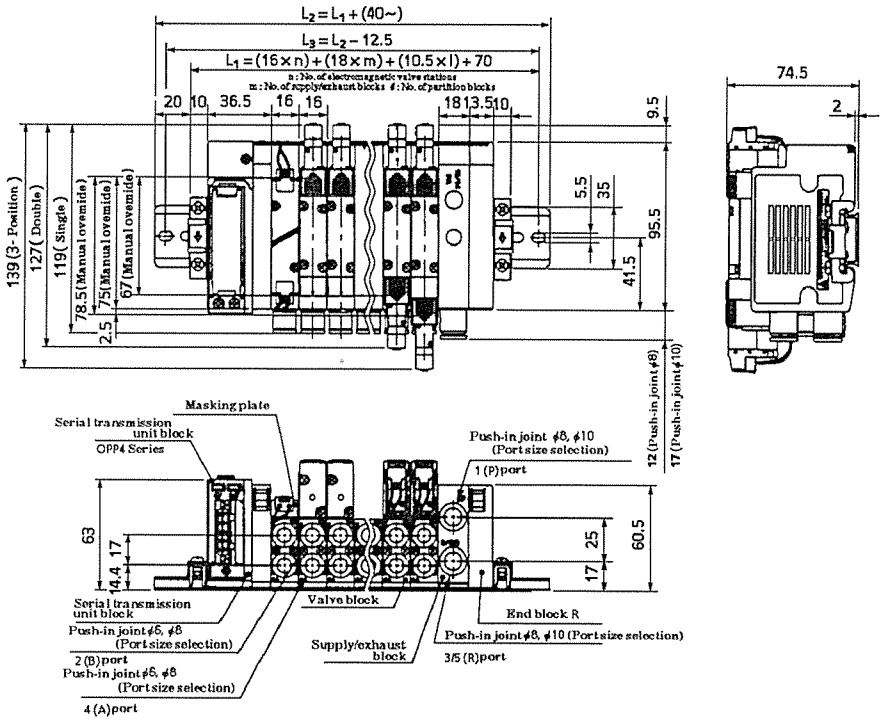
Item		Specifications
Power voltage		DC22.8V - 26.4V (DC24V +10%, −5%)
Electric consumption		110 mA or lower (While all points are OFF.)
Insulation resistance		Between all external terminals in a lump and Case 30MΩ or more DC500VM
Withstanding voltage		Between all external terminals in a lump and Case AC500V for 1 minute
Noise proof		500Vp-p Pulse width 100nsce, 1μsec
Vibration proof	Durability	10 - 150 - 10 Hz 1 octave/min. 15 sweeps in the 3 each axis of X, Y and Z while the half amplitude is 0.75mm or 10G whichever smaller.
	Wrong operation	10 - 150 - 10 Hz 1 octave/min. 4 sweeps in the 3 each axis of X, Y and Z while the half amplitude is 0.5mm or 7G whichever smaller.
Shock proof		30G 3 directions 3 times
Ambient temperature		−5 - 55°C
Ambient humidity		30 - 85%RH (No dew fall)
Working environment		No corrosive gas
Communication object		CC-Link system
Transfer rate		156k / 625k / 2.5M / 5M / 10M bps (Selectable)
No. of output points		16 points
Output insulation type		Photo coupler insulation
Max. load current		40mA/point
Leak current		0.1mA or lower
Residual voltage		0.5V or lower
Fuse		24V 1A(Not replaceable)
Action indicator		LED (power lamp and communication status indicator only)
No. of monopolized stations		1 station

1.4 External dimendions of solenoid valve

- MN4GA1※0-※-※T7G1-※

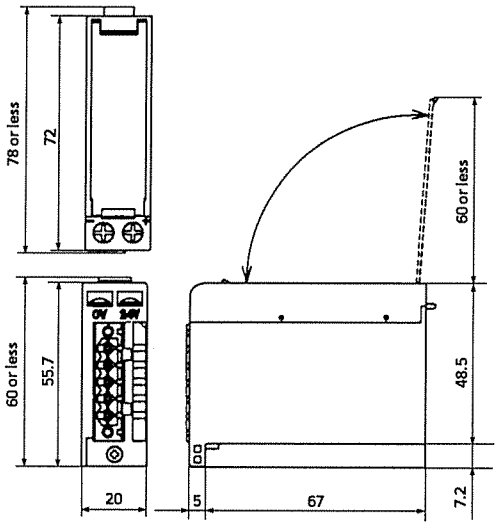


- MN4GB2※0-※-※T7G1-※



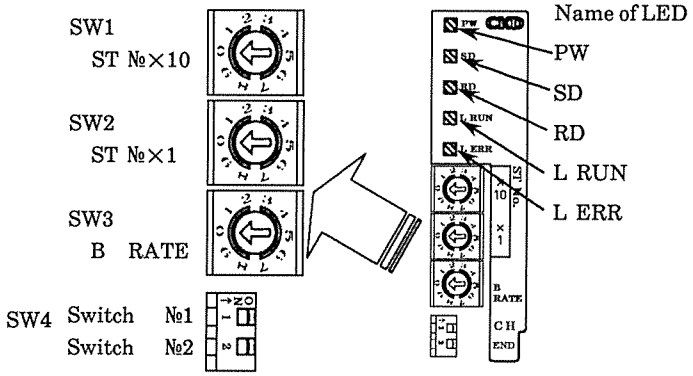
1.5 Slave station for valve

1) Appearance



2) Indicators and switches on Slave station

(1) Various LED lamps are installed in front of station to aid visual varification of operational conditions. Each function is printed on the sheet made of resin. The content of each function is posted in the table below. Make use of them during maintenance works or for varification of operation.



Name of switch		Content of Setting
SW1 SW2	ST №×10, ×1 (Station number setting)	Sets the slave station numbers within the bounds of 1 - 64. SW1 takes care of the second digit (10) while SW2 takes care of the first digit (1).
SW3	B RATE (Transfer rate setting)	Sets the transfer rate between the master and slave stations. A value ranging from 0 to 4 is set.
SW4 №1	C H (Switch used for specifying the state of output after error)	Specify whether to hold (HDL) or clear (CLR) the output when an error occurs.
SW4 №2	END (End station setting switch)	Set to ON if the slave station is at the end of the comm. ※

※ Turn this switch "OFF" when the high-performance cable exclusively for CC-Link is used, and connect a terminal resistor externally.

Name of LED	Content of indication
PW	Lit when unit power is ON.
SD	Blinks while Data being output. (Lit again when data is received normally.)
RD	Blinks while Data being input. (Lit again when data is received normally.)
L RUN	Lit when data is received normally from the master station.
	Goes off when data is absent for a preset period of time.
L ERR	Lit when a transmission error (CRC error) is detected.
	Lit when the user specifies a value out of range when setting the station number or transfer rate.
	Blinks when the station number or transfer rate setting is modified during operation.
	Goes off after a preset period of time.

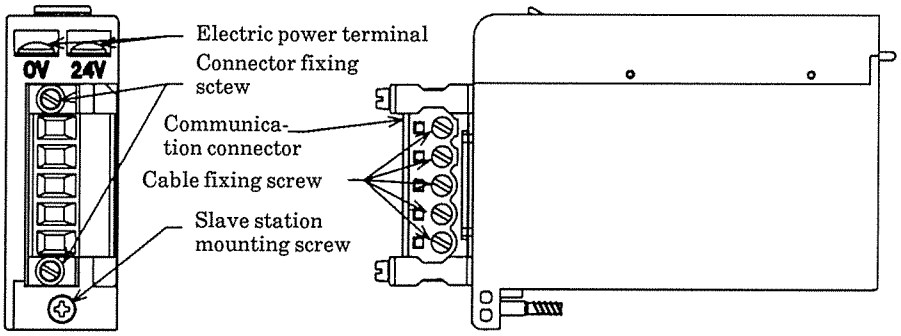
(2) Setting switch sets the valve slave station number and transmission speed. (Refer to "Chapter 3. Operation".)

⚠ CAUTION

- Before changing the switch positions, be sure to cut the power.
- The cover of the slave station unit for the solenoid valve system can easily be opened and closed. Keep the cover closed except when you have to change switch positions or reconnect wires. If you keep the cover open unnecessarily, foreign matter may enter the circuit board causing an unexpected failure, or the cover may be broken by accidental contact. While the cover is open as you change switch positions or reconnect wires, be careful not to cause the entry of foreign matter.
- Setting switch has been precisely built. Disorderly handling may cause damage of switch. To set station number, never touch internal circuit printed board.

1.6 Mounting of Slave station for valve and Removal of Slave station for valve

The slave station unit OPP4-1G is normally fixed by cable fixing screw to the connecting block (next to the solenoid valve manifold) and connected with the solenoid valve manifold by a connector Follow the procedure below when you mount and dismount the slave station:



1) Slave Station Mounting Method

① Turn the slave station power "OFF".

② Set slave station No., transfer rate and output at abnormal communication.

③ Fix the power line and communication connector securely.

④ Holding the slave station, insert it into the slave station connecting block slowly from forward along the guide.

⑤ Ensuring the connecting block was connected with each other, tighten the slave station fixing screw firmly. (Adequate tightening torque: 0.5 N·m)

⑥ After checking for safety, turn the slave station power switch "ON".

> ⚠ CAUTION
> • Before turning the slave station power ON, check the slave station address, transfer rate and output setting during abnormal communication.

2) To Remove Slave Station:

① After checking for safety, turn the slave station power "OFF".

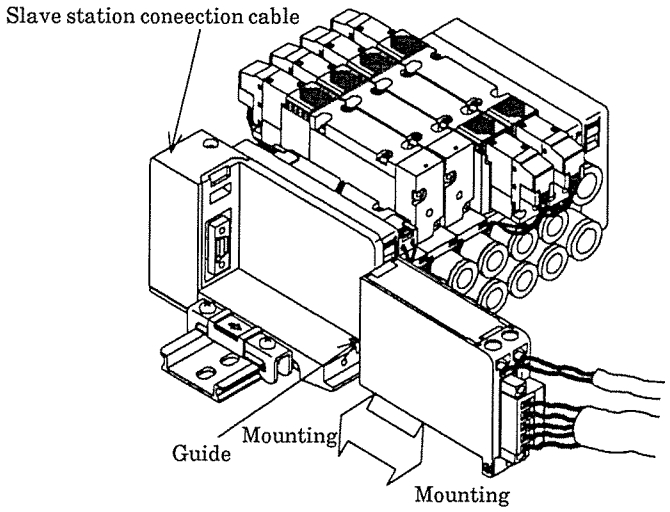
② Detach the slave station fixing screw.Since the slave station fixing screw is a fall preventive one, stop loosening it where it is detached from the slave station connecting block.

③ Holding the slave station, pull it toward the operator side.

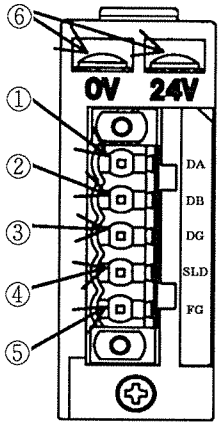
④ After ensuring that the slave station power is turned OFF, disconnect the power line and communication connector.

⚠ CAUTION

- Avoid pulling out the slave station while pulling the cable or connector; otherwise, broken circuit and damage may result.
- Touching the electrical wiring connection part (bare live part) may cause an electric shock.



The following are the functional explanation of each terminal and main places to which the terminal is connected.



	Symbol	Function	Objects to be connected	Indicated Cable Color
①	DA	Data terminal	Connect this terminal to the master or other slave communication line "DA".	Blue (DA)
②	DB	Data terminal	Connect this terminal to the master or other slave communication line "DB".	White (DB)
③	DG	Data terminal	Connect this terminal to the master or other slave communication line "DG".	Yellow (DG)
④	SLD	Shield terminal	Connect this terminal to the master or other slave communication line "SLD".※	Bare (SLD)
⑤	FG	Ground terminal	Class 3 or higher grounding should be provided.	(FG)
⑥	Power input	Slave station power supply (including load power supply)	Apply source of power with -5% noise, such as DC24V±10%.	(24V)
				(0V)

※ : SLD and FG terminals are connected inside the slave station unit.

2. CAUTION

1) Output transmission delay time

Refer to Users' manual for the master station concerning to transmissioin delay time.

The transmission delay within the entire system depends on the scan time achieved by the PLC unit and on other devices included in the network.

Solenoid valve responding time, of course, varies depending on model. It is advisable of referring to valve specification.

As for OFF time, there is another delay factor of approx. 20ms due to flywheel diode being used for surge absorbing circuit to valve slave station.

3. OPERATION

3.1 Switch setting

The switches are used for four different kinds of setup: setting the station number, setting the transfer rate, specifying whether to hold or clear the output during an error, and specifying the end station. Since different switches are used for different kinds of setup, you must correctly identify the switch to be used. Before changing the switch positions, be sure to cut the power.

⚠ CAUTION

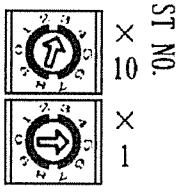
- Before changing the switch positions, be sure to cut the power.
- The cover of the slave station unit for the solenoid valve system can easily be opened and closed. Keep the cover closed except when you have to change switch positions or reconnect wires. If you keep the cover open unnecessarily, foreign matter may enter the circuit board causing an unexpected failure, or the cover may be broken by accidental contact. While the cover is open as you change switch positions or reconnect wires, be careful not to cause the entry of foreign matter.
- Setting switch has been precisely built. Disorderly handling may cause damage of switch. To set station number, never touch internal circuit printed board.

1) Station number setting (SW1 and SW2)

Assign a station number to the slave station using a number between 01 and 64.

(Can't use the same station No.)

- Use the "×10" switch to specify the 10 column digit in the station number.
- Use the "×1" switch to specify the 1 column digit in the station number.



ex. Station No. 35

2) Transfer rate setting (SW3)

Set the transfer rate for communication between the master and slave stations.

B RATE position	Transfer rate
0	156k bps
1	625k bps
2	2.5M bps
3	5M bps
4	10M bps

ex. B RATE 2
(2.5M bps)

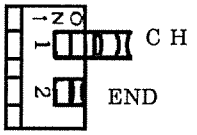
⚠ CAUTION

- The transfer rate should be set in the same manner as with all master stations, local stations and remote stations on the network. If this setting differs even in one station, no normal data link is possible.

3) Other setups (SW4)

Using this switch, specify whether to hold or clear the output when an error occurs and whether this slave station is the end station (station furthermost from the master station) or not.

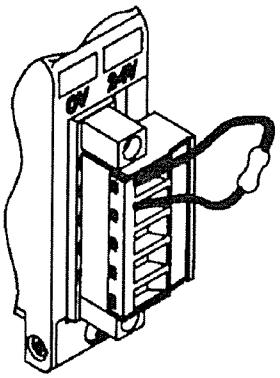
№	Function	Position	
		OFF	ON
1	Specifies whether to hold or clear the output when an error (bus line error, time-over, etc.) occurs.	Clear	Hold
2	Specifies whether this slave station is the end station or not.	OFF if this slave station is the intermediate station.	ON if this slave station is the end station.



ex. Hold (ON)
Intermediate station (OFF)

※ Terminal station setting in using CC-Link exclusive high-performance cable:

When the high-performance cable exclusively for CC-Link (FANC-SBH, etc. by KURAMO DENKO) is used for a communication cable, be sure to turn the terminal station setting (SW4 No.2) "OFF", and connect a commercially available resistor 130 Ω (1/2 W) between the communication connectors DA, DB of this slave station. For the resistor lead part, insulation is always required.



⚠ CAUTION

- If the setting is carried out with the power "ON", the setting contents may not be recognized. Therefore, set the switch always with the slave station power "OFF".
- If a terminal resistor is connected externally (on a terminal block), be sure to set this switch to OFF.

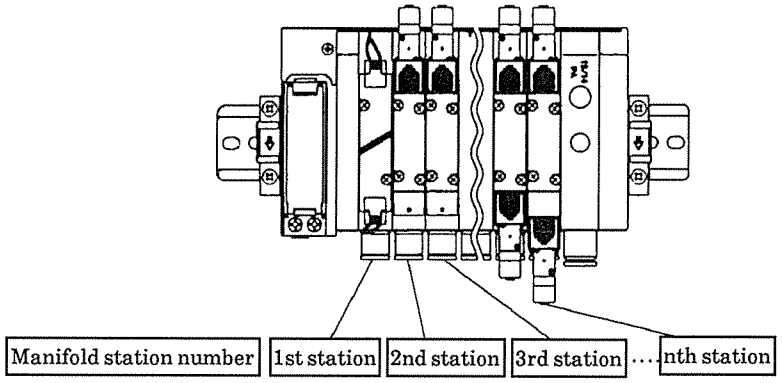
3.2 Correspondence between Output Nos. and internal connector Nos.

Those Numbers correspond as per table, posted below.

Correspondence between Output Nos.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Internal connector pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

3.3 Correspondence between Output Nos. and Valve solenoid Nos.

1) Connector pin Nos. and manifold solenoid correspond with each other as per tables posted below.
2) Manifold block number is allocated from leftmost block toward right while holding piping port facing to you, regardless the location of wiring block.



Manifold wiring example

◦ For Single solenoid valve

	Connector pin No.															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1st station	○															
2nd station		○														
3rd station			○													
4th station				○												
5th station					○											
6th station						○										
7th station							○									
8th station								○								
9th station									○							
10th station										○						
11th station											○					
12th station												○				
13th station													○			
14th station														○		
15th station															○	
16th station																○
Symbol	○ SOL. (a) side															

(Corresponds with up to the 16th manifold block.)

◦ For Double solenoid valve

	Connector pin No.															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1st station	○	●														
2nd station			○	●												
3rd station					○	●										
4th station							○	●								
5th station									○	●						
6th station											○	●				
7th station													○	●		
8th station															○	●
9th station																
10th station																
11th station																
12th station																
13th station																
14th station																
15th station																
16th station																
Symbol	○ SOL. (a) side / ● SOL. (b) side															

(Corresponds with up to the 8th manifold blocks.)

◦ For Mixed (Single and Double) solenoid valve

	Connector pin No.															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1st station	○															
2nd station		○														
3rd station			○	●												
4th station					○	●										
5th station							○									
6th station								○								
7th station									○	●						
8th station											○					
9th station												○				
10th station													○	●		
11th station															○	●
12th station																
13th station																
14th station																
15th station																
16th station																
Symbol	○ SOL. (a) side / ● SOL. (b) side															

(Corresponds with up to the 16th solenoid valve.)

3) Output pin No. sometimes become vacant depending upon manifold valve block number due to the sequential wiring. Such vacant pin is not available to be used for driving any other equipment.

3.4 Programming

This slave station unit is seen as a 16-point output unit constituting a remote I/O station. (The unit monopolizes the position of a single station.) When creating programs, refer to the Mitsubishi User's Manual (CC-Link system master/local units).

4. INSTALLATION

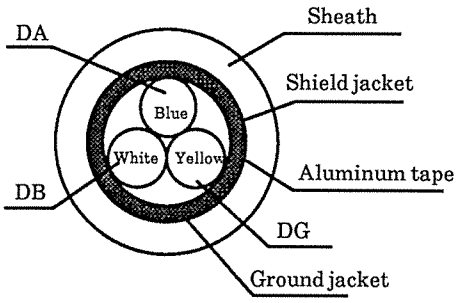
4.1 Wiring

It is required to connect signal circuit with power line to make this model MN4G※※-T7G1 function. Erroneous connection causes not only malfunction but in some cases, vital transmission damage to this station including other related devices. Read and understand the content of each User's manual for Sequencer and CC-Link system, product of Mitsubishi Denki Co., Ltd., as well as reading this manual to accomplish correct wiring.

1) Specifications of twist pair cable (communication line)

The table below illustrates the twist pair cable recommended for use in the CC-Link system.

The quality of data transfer in the CC-Link system is guaranteed only if you use the recommended cable. Note the name and specifications of the recommended cable in the table below.

Item	Specifications	
	Cable exclusively for CC-Link	High-performance cable exclusively for CC-Link
Name	FANC-SB	FANC-SBH
Manufacturer	Kuramo Denko Co., Ltd.	
Kind of cable	Twist pair cable with shield	
Conduit sectional area	0.5mm^2	
Conduit resistance (20°C)	37.8Ω / km or less	
Insulation resistance	10000MΩ-km or more	
Withstanding voltage	DC500V 1 minute	
Capacity of Static electricity (1kHz)	60nF / km or less	40nF / km or less
Impedance characteristic (1MHz)	100±15Ω	130±15Ω
Sectional view		
External dimension	7mm	8mm
Approximate weight	65kg/km	60kg/km

Note : A CC-Link special cable other than that described in the above table can also be used. However, the transfer distance may vary depending on the type of cable. To use such cable, refer to the User's Manual for CC-Link or contact the cable manufacturer.

2) Wiring of Signal Line (Conductor)

When connecting CC-Link cable to the slave station, follow the procedure described below:

① After checking for operational safety, turn the slave station power "OFF".

② Insert DA (blue), DB (white), DG (yellow) and SLD (bare) of CC-Link cable into each hole (DA, DB, DG & SLD) while noting the supplied connecting connector (BLZ5.08/5F AU) direction. (Refer to the figure below.)

③ Firmly tighten each cable, using the cable fixing screw of connecting connector. (Adequate tightening torque: 0.5N·m)

④ After ensuring that the cable name and the name indicated on this product are the same, insert the connecting connector to the slave station, and tighten the connector fixing screw firmly to the tightening torque of 0.3N·m.

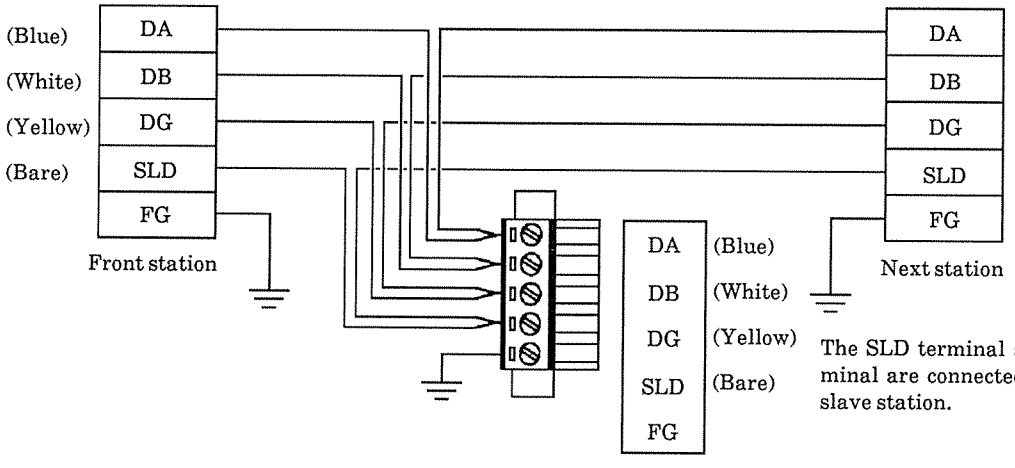
<Recommended Connector>

- Supplied Connector

  BLZ5.08/5F Au (with connector fixing screw) Weidmüller

⚠ CAUTION

- For the signal line, be sure to use the cable conforming to the CC-Link specification.
- When inserting a cable into the connector, the cable may intrude into not the connector tightening side but the rear side; it is, therefore, necessary to keep the cable fixing screw satisfactorily loose.
- For the connector provided with a connector fixing screw, be sure to firmly tighten the connector fixing screw when inserting the connector. If it is only inserted, the connector will come off, thereby causing malfunctions. When no connector fixing screw is provided, ensure that the connector claw is engaged securely.
- In CC-Link, T-branch connection and star connection are impossible. Previous station / Next station.



3) Power Line Wiring

When connecting the power cable to the slave station, follow the procedure described below:

① Turn the slave station power and communication power OFF.

② Mount a 6 mm or less wide solderless terminal for M3 to the power cable.

③ Fix the 24 V line of power cable to the power terminal: 24 V terminal (+ terminal) and 0 V line to 0 V terminal (- terminal) to the adequate tightening torque while aligning the polarity. (Adequate tightening torque: 0.5N·m)

In this slave station (OPP4-1G), the slave station (unit) power supply and load (valve) power supply are common, which cannot be separated from each other.

4) Caution when Wiring

· To avoid any problems due to noise, observe the followin when wiring :

① Provide a power source for every manifold solenoid valve wherever possible, and provide wireing individually.

② Minimize the wiring distance whenever possible.

③ Do not share a comon power source with equipment such as an inberter or motor, etc. which can be a possible source of noise.

④ Do not wire the power line and signal line in porallel with another power line.

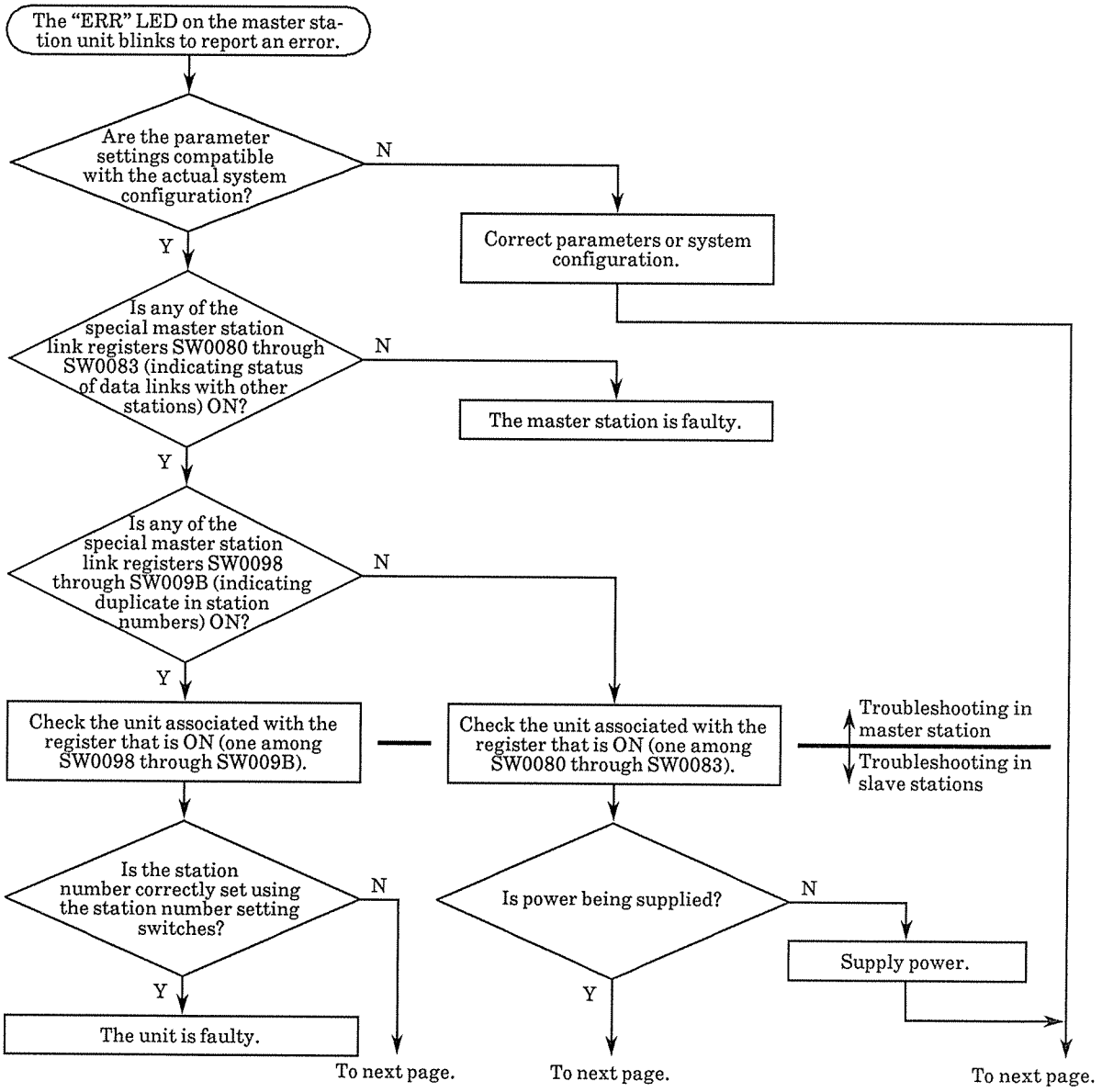
⚠ CAUTION

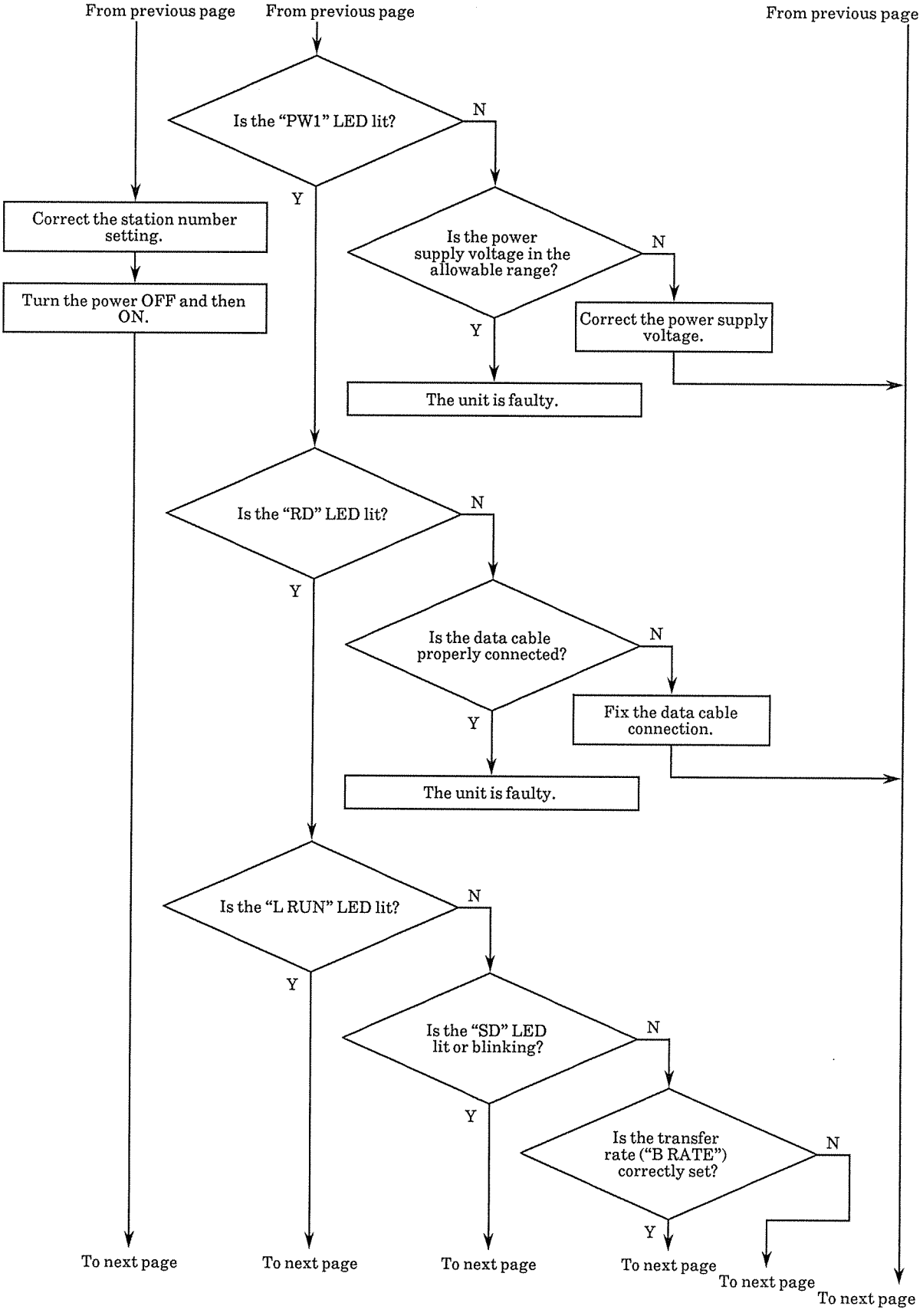
- If a twisted only wire is connected direct to the terminal block, firing may result; it is, therefore, necessary to always use a crimp terminal.
- Connect the power supply after checking the slave station terminal polarity and cable terminal polarity.
- Select a power cable after calculating the current consumption.
- When designing the system to supply power to duplex number of slave stations and remote I/O stations, choose and wire the source of power cord with a consideration of voltage drop.
- Secure ample voltage within rating by providing dual wiring, if necessary, to keep as small voltage loss of single system as possible or installing source of power near-by solenoid

5. MAINTENANCE

5.1 Troubleshooting

Troubleshooting should address the entire system rather than a particular slave station. This slave station unit has its LED indicators similar to those provided on a Mitsubishi remote I/O station. Looking at these indicators and the indicators on the master station unit, you can determine the cause and take corrective action. During such troubleshooting operations, refer to Chapter 13 "Troubleshooting" of the Mitsubishi User's Manual (CC-Link system master/local units).




From previous page
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Is the "PW1" LED lit?
N
Y
Correct the station number setting.
Turn the power OFF and then ON.
Is the power supply voltage in the allowable range?
N
Y
Correct the power supply voltage.
The unit is faulty.
Is the "RD" LED lit?
N
Y
Is the data cable properly connected?
N
Y
Fix the data cable connection.
The unit is faulty.
Is the "L RUN" LED lit?
N
Y
Is the "SD" LED lit or blinking?
N
Y
Is the transfer rate ("B RATE") correctly set?
N
Y
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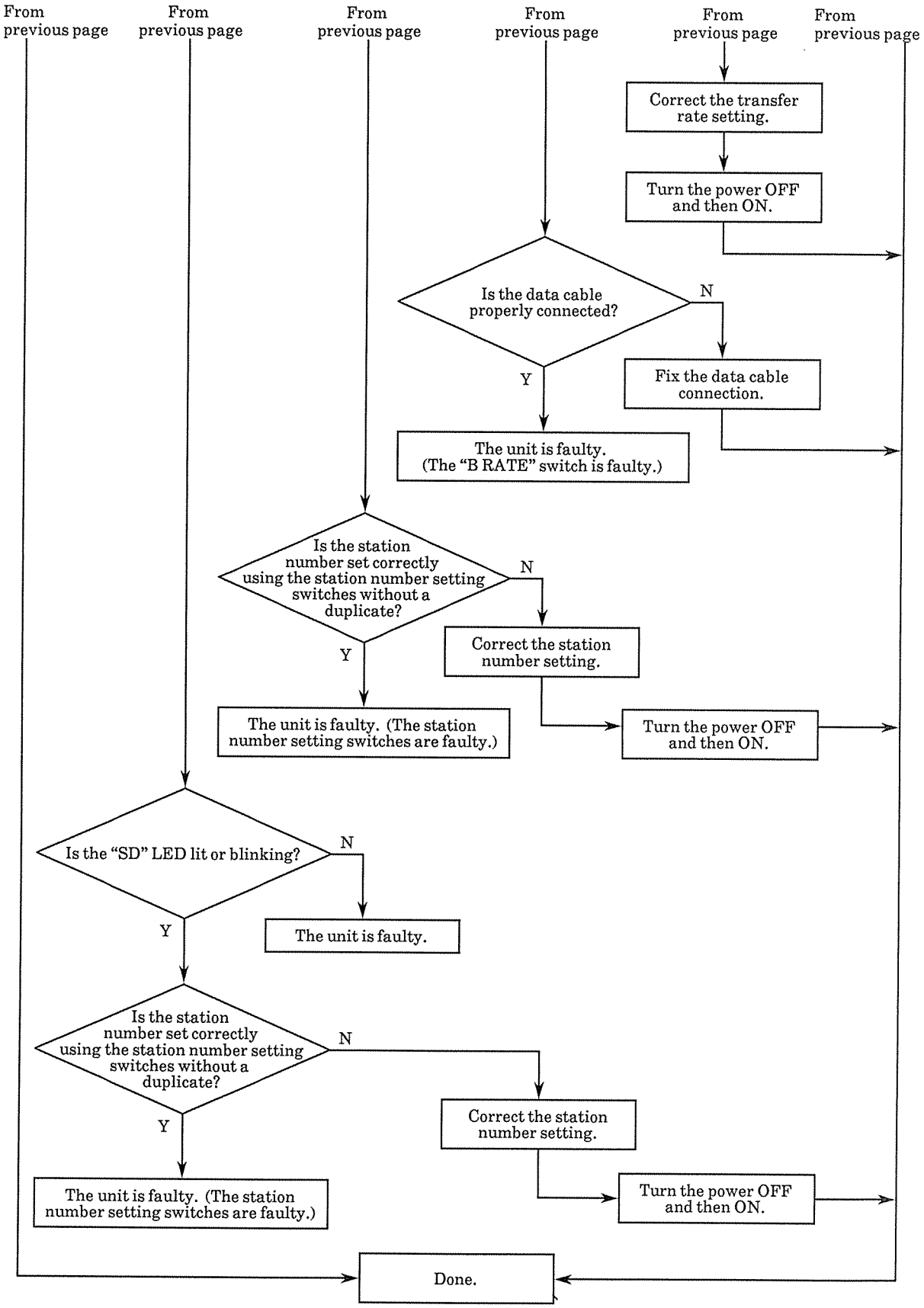
To next page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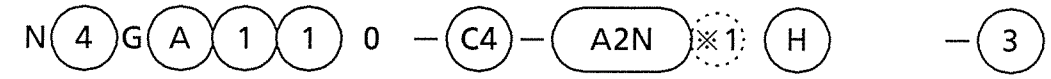
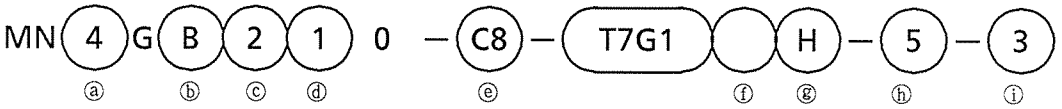
From previous page
Correct the transfer rate setting.
Turn the power OFF and then ON.
Is the data cable properly connected?
N
Y
Fix the data cable connection.
The unit is faulty. (The "B RATE" switch is faulty.)
Is the station number set correctly using the station number setting switches without a duplicate?
N
Y
Correct the station number setting.
The unit is faulty. (The station number setting switches are faulty.)
Turn the power OFF and then ON.
Is the "SD" LED lit or blinking?
N
Y
The unit is faulty.
Is the station number set correctly using the station number setting switches without a duplicate?
N
Y
Correct the station number setting.
The unit is faulty. (The station number setting switches are faulty.)
Turn the power OFF and then ON.
Done.

6. HOW TO ORDER

• Solenoid valve



• Manifold



ⓐ № of port		ⓑ Piping direction		ⓒ Series model		ⓓ Operator type	
Code	Discription	Code	Discription	Code	Discription	Code	Discription
3	3-port valve	A	Top porting (Direct piping)	1	MN4G1	1	2-position single
4	5-port valve			2	MN4G2	2	2-position double
		B	Side porting (Base piping)			3	3-position CC
						4	3-position ABR connection
						5	3-position PAB connection
						1	normal close NC (3GA)
						11	Normal open NO (3GA)
						8	Mix

※ There is not MN3GB

ⓔ Port size		ⓕ Wiring type		ⓖ Option		ⓗ № of stations		ⓘ Voltage	
Code	Discription	No code	Standard	No code	No option	Code	Discription	Code	Discription
CX	Mix			H	Wrong operation prevention valve	2~	№of stations	3	DC24V
See table 1		W	Double wiring type	K	External pilot Ozone and cutting oil resistant model				
				A					
				F	Bulit-in AB port filters				

Table 1 ⓔ Port size

	Code	Port size	MN4GA1	MN4GB1	MN4GA2	MN4GB2
A / B port	C4	Push-in joint ϕ4	●	●		
	C6	Push-in joint ϕ6	●	●	●	●
	C8	Push-in joint ϕ8			●	●
	M5	M5	●			
	06	Rc1/8			●	
P / R port (Push-in joint)			ϕ6, ϕ8, ϕ6.4		ϕ8, ϕ10	

※1 Same as A / B port size solenoid

※1 Lead wire length.

For details, check the catalog.